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7 MULTIPLE FAMILY UNIT ANALYSIS
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TOWNSHIP OF TORONTO PLANNING BOARD

COOKSVILLE

ONTARIO



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Derek J.W. Little
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7 MULTIPLE FAMILY UNIT ANALYSIS

1 9 6 6

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I. INTRODUCTION =====

(a) Purpose of the Survey

In June 1965, the Toronto Township Planning Board prepared the "Apartment Survey 1965", which presented data on the quantity, location, rentals and occupancy of apartment and maisonette units in the Township of Toronto.

Since that time there has been a large increase in these types of units, and in town house units, of which only a few had been constructed prior to 1965. The Apartment Survey recorded the population by age groups, (0-5 yrs., 6-13 yrs., 14-18 yrs., 19-59 yrs., etc.) persons per unit, and school children per unit in apartments, maisonettes and row houses. However, the recent school-age population from multi-family areas suggests these figures so obtained were either too general or the population make-up has changed since the time of the survey.

The purpose of this report is to further study the population characteristics of these unit types to provide bases for estimating with more accuracy the number of potential Junior Public, Senior Public, High School, and Separate School students.

(b) Source of Information

The basic data were obtained during 1966 from and with the assistance of the Peel County Assessment Department.

(c) Reliability of Data

The high degree of correlation obtained from the apartment and maisonette data indicates that the results from the data will provide a reasonably sound basis for preparing estimates and projections. It should be noted that the data were obtained from a survey of all occupied apartment and maisonette units in the Township for which complete information was available - approximately 93%.

The data regarding the characteristics of town houses were derived from a small sample, because at the time when the assessment details were compiled, many of the units were either under construction or not fully occupied. In addition, complete population data for one large block of units was not available without a field survey, which could not be undertaken at that time.

Consequently, while the population characteristics for town houses set out in this report provide a fairly reasonable basis for projection, it is recommended that when more complete assessment data is available, this type of development should be restudied.

II. POPULATION CHARACTERISTICS

(a) Persons Per Unit By Unit Type and Unit Size

The number of persons per unit, as reported in Table I, ranges from 1.45 persons per unit in a bachelor apartment to 5.40 persons per unit in a four bedroom town house.

The graphical plotting of the data (Figure I) indicates overall correlation. Slight divergence between the maisonette and town house curves is explained by the increased percentage of senior public and secondary school-age children living in town houses over those living in maisonette units.

The jump of 0.4 persons per unit between similar sized apartment and maisonette or town house units clearly indicates the different character and function of the unit types.

TABLE I

UNIT POPULATION BY UNIT SIZE AND UNIT TYPE (P.P.U.)

| Unit Type | Number of Bedrooms | | | | |
|-------------|--------------------|------|------|------|------|
| | B | 1 | 2 | 3 | 4 |
| APARTMENTS | 1.46 | 2.14 | 3.08 | 4.03 | |
| MAISONETTES | | | 3.50 | 4.36 | 5.14 |
| TOWN HOUSES | | | | 4.38 | 5.40 |

AVERAGE FAMILY SIZE

(BY UNIT SIZE & UNIT TYPE)

4.

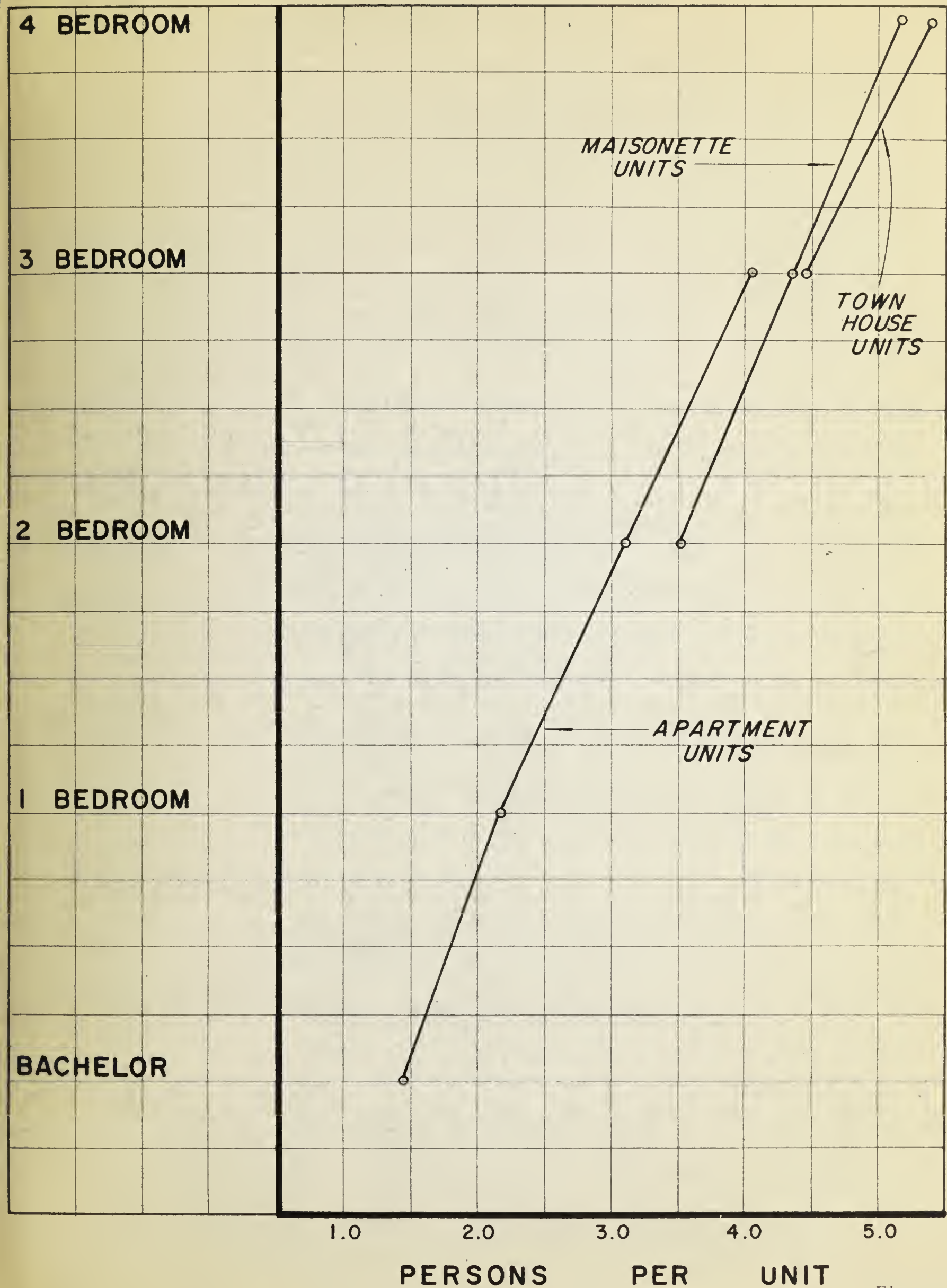


Figure I

(b) Age Distribution by Unit Type

As can be seen by Figure II, the population characteristics of apartments, maisonettes, and town houses are not typical of a cross-section of the population. Generally speaking two peaks are evident for each of the three types of units, one for school-age children and one for adults of parental age; however, these peaks do not coincide for each type of unit.

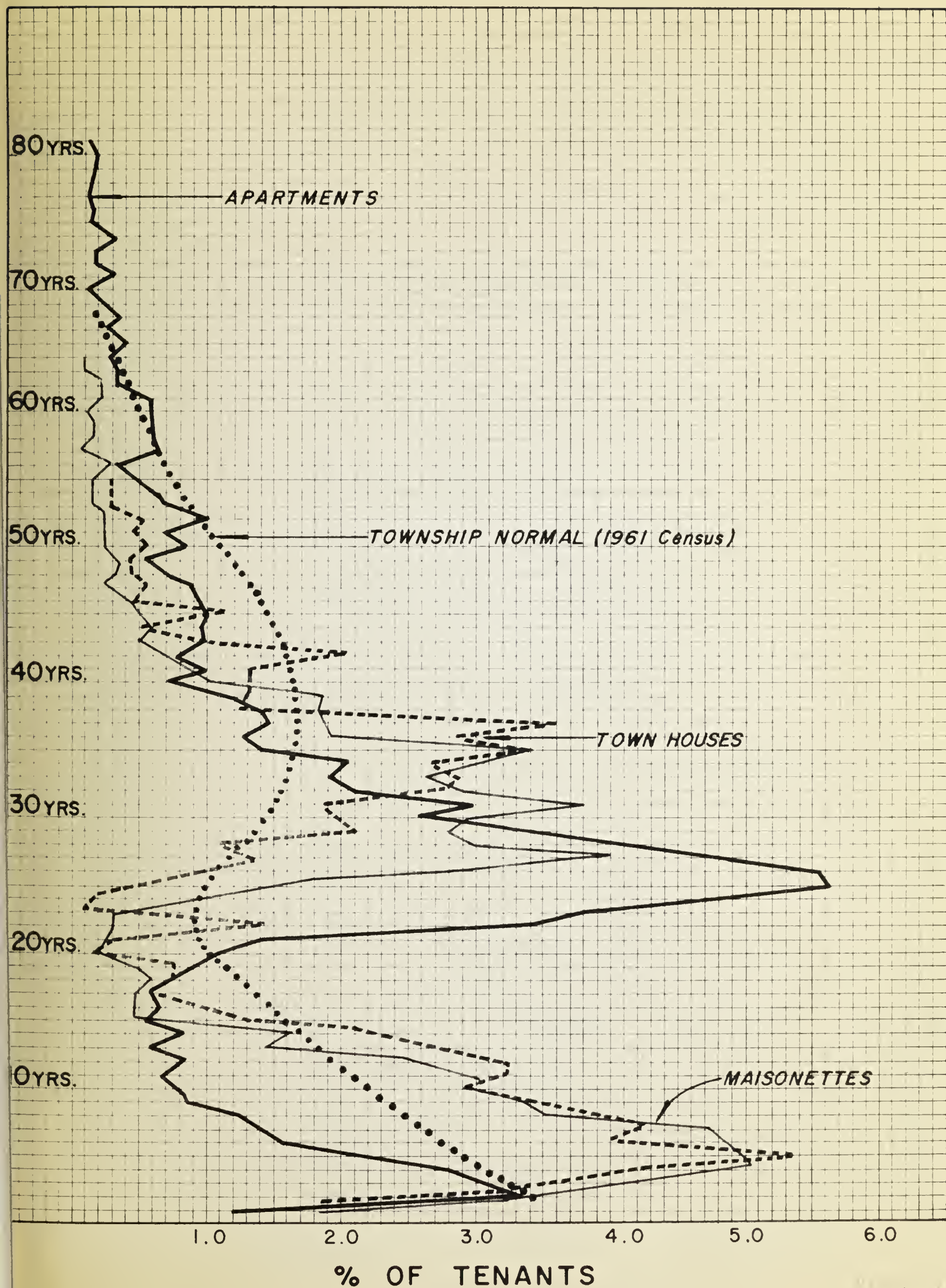
For apartments two peaks are evident about 2 and 25 years. Children between the ages of 1 to 8 years make up 16.59% of apartment residents while young adults between 20 and 39 make up 55.79%. It is usually found that older people make up a large proportion of apartment residents, however this does not appear to be the case in Toronto Township as only 11% are age 50 or more, and only 2.77% over 65 years.

In maisonette units the two peaks are similar to those associated with apartments but are slightly advanced, occurring about 5 and 31 years. 45.85% of the maisonette population is in the 1 to 14 years bracket and 41.74% in the 25 to 40 age range. This indicates that there are approximately three times as many school-age children in maisonette units than in apartment units.

In town houses the two peaks are more advanced than for maisonettes. The peak for school-age children is steeper and broader than for maisonettes, as children between 1 - 14 years make up 45.85% of the population and adults between 25 and 40 make up another 41.74%.

POPULATION CHARACTERISTICS

(BY HOUSING TYPE)



The shift in the age distribution curves appears to indicate that there may be a trend for families requiring rental accommodation to move from apartments to maisonettes and to town houses as their children get older and family size increases.

(c) School-Age Population by Unit Type

The school-age population distribution is shown in Table III and Figure III. As can be seen from Table II, students make up only 13.40% of the total population in apartments and the largest portion of these are in the lower grades of junior public schools.

In maisonettes, students make up 33.97% of the population, with most of these (24.94%) being of junior public school age. Senior public school making up double the percentage of a similar age in apartments.

In town houses the percentages of students make up 39.19% of the total town house population which is considerably higher than apartments or maisonettes.

TABLE II

SCHOOL-AGE POPULATION BY UNIT TYPE

=====

(As a percentage of total unit population)

| | <u>APARTMENTS</u> | <u>MAISONETTES</u> | <u>TOWN HOUSES</u> |
|---------------|-------------------|--------------------|--------------------|
| JUNIOR PUBLIC | 7.54% | 24.94% | 24.50% |
| SENIOR PUBLIC | 1.10% | 2.26% | 5.05% |
| SECONDARY | 3.31% | 3.77% | 5.84% |
| SEPARATE | <u>1.45%</u> | <u>3.00%</u> | <u>3.80%</u> |
| TOTALS: | 13.40% | 33.97% | 39.19% |

SCHOOL AGE POPULATION

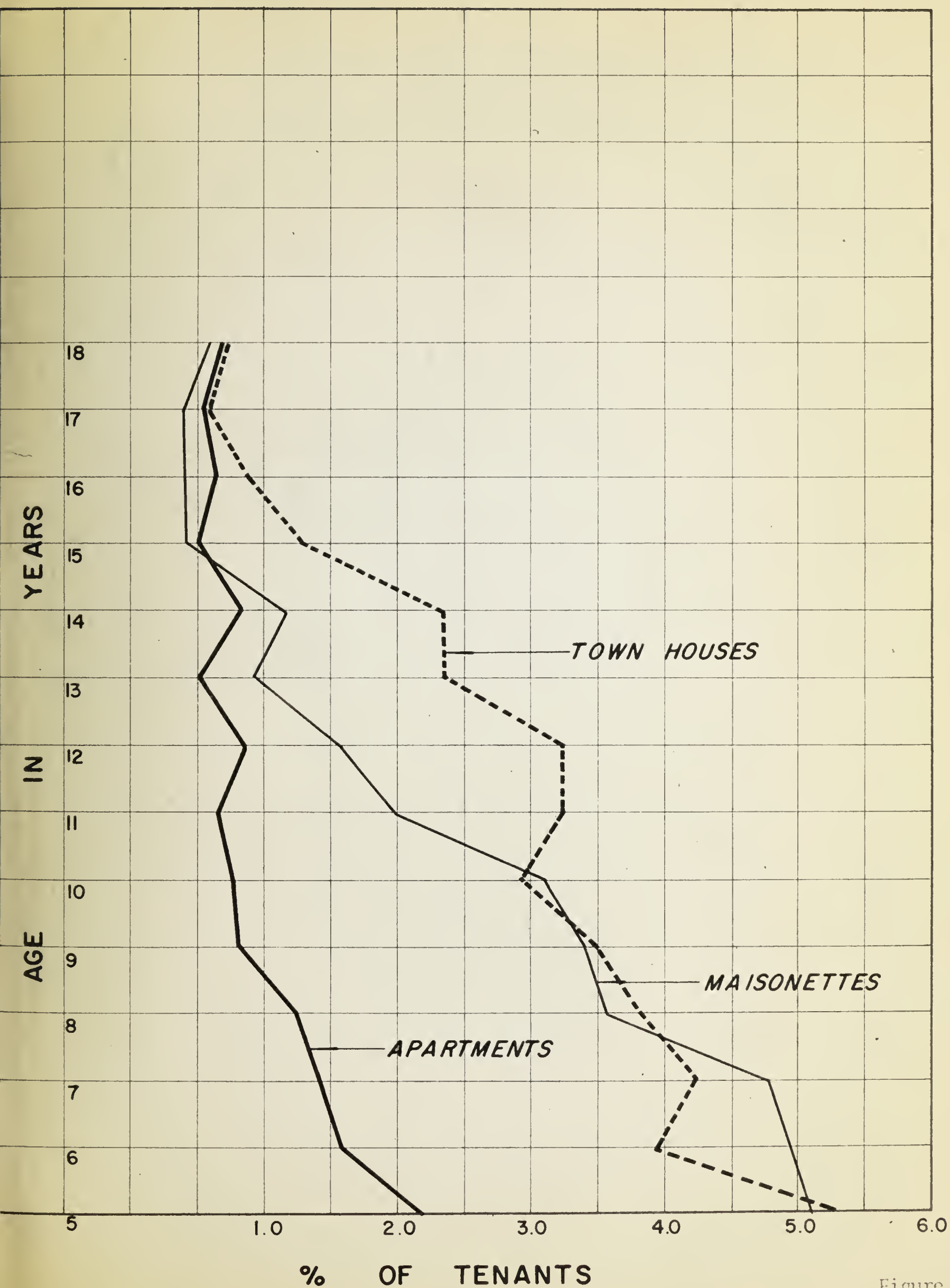


Figure III

Of these a much larger portion are of senior public and secondary school-age than in maisonettes or apartments.

III. UNIT CHARACTERISTICS =====

(a) Unit Type Distribution

At the present time there appears to be about 2,221 multiple family units built in Toronto Township.

Of these 72.6% are apartments, 15.5% maisonettes and 11.9% are town houses.

(b) Unit Size Distribution

Of the apartment units 49.0% are 1 bedroom and 37.9% 2 bedrooms. Figure IV illustrates this and indicates relatively few are bachelor or 3 bedroom units.

Figure V indicates that of maisonettes, 2 bedroom units make up 50.7% of the total and 3 bedroom units 46.5%. Four bedroom units constitute 2.8%.

Figure VI indicates that about 87.5% of town house units are 3 bedrooms with the remaining 12.5% being 4 bedroom units; however, there is little difference between the two, as most of the 3 bedroom units have a 2nd floor den or study that is identical in size to the bedrooms and is often used as such.

TABLE III
=====

a) TOTAL NUMBER OF APARTMENT UNITS
=====

| <u>UNIT SIZE</u> | <u>INVENTORY</u> | <u>SURVEYED</u> | <u>% SURVEYED</u> |
|------------------|------------------|-----------------|-------------------|
| Bachelor | 134 | 106 | 79.1 |
| 1 Bedroom | 794 | 710 | 90.6 |
| 2 Bedroom | 594 | 557 | 93.8 |
| 3 Bedroom | 90 | 86 | 95.6 |
| | <u>-----</u> | <u>-----</u> | <u>-----</u> |
| TOTAL: | 1613 | 1469 | 91.1 |
| | ===== | ===== | ===== |

b) TOTAL NUMBER OF MAISONETTE UNITS
=====

| <u>UNIT SIZE</u> | <u>INVENTORY</u> | <u>SURVEYED</u> | <u>% SURVEYED</u> |
|------------------|------------------|-----------------|-------------------|
| 2 Bedroom | 191 | 185 | 96.9 |
| 3 Bedroom | 145 | 136 | 93.8 |
| 4 Bedroom | 7 | 7 | 100.0 |
| | <u>-----</u> | <u>-----</u> | <u>-----</u> |
| TOTAL: | 345 | 328 | 95.1 |
| | ===== | ===== | ===== |

c) TOTAL NUMBER OF TOWN HOUSE UNITS
=====

| <u>UNIT SIZE</u> | <u>INVENTORY</u> | <u>SURVEYED</u> | <u>% SURVEYED</u> |
|------------------|------------------|-----------------|-------------------|
| 3 Bedroom | 230 | 135 | 58.7% |
| 4 Bedroom | 33 | 15 | 45.5% |
| | <u>-----</u> | <u>-----</u> | <u>-----</u> |
| TOTAL: | 263 | 150 | 57.0 |
| | ===== | ===== | ===== |

DISTRIBUTION
OF
APARTMENT UNITS

12.

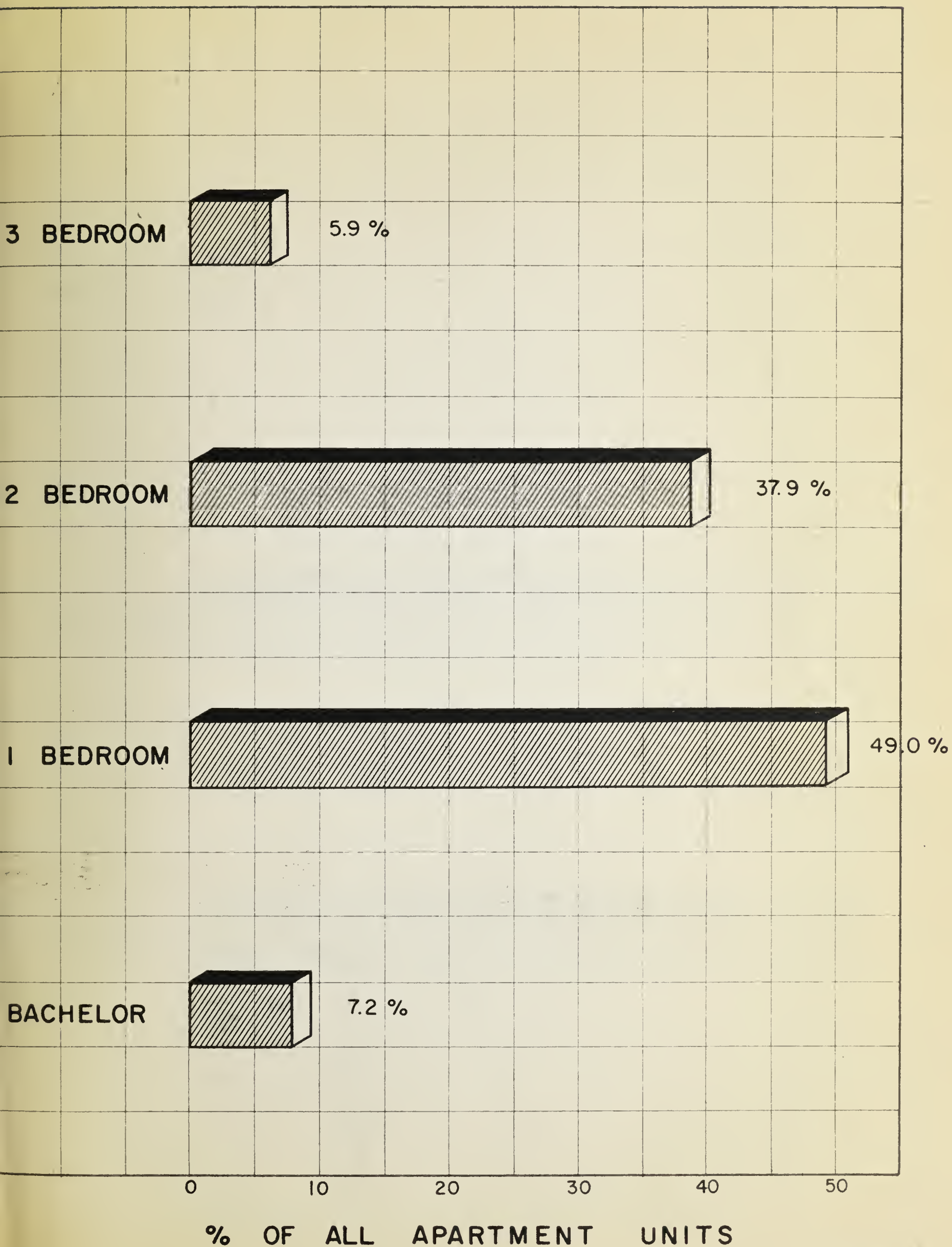


Figure IV

DISTRIBUTION OF MAISONETTE UNITS

13.

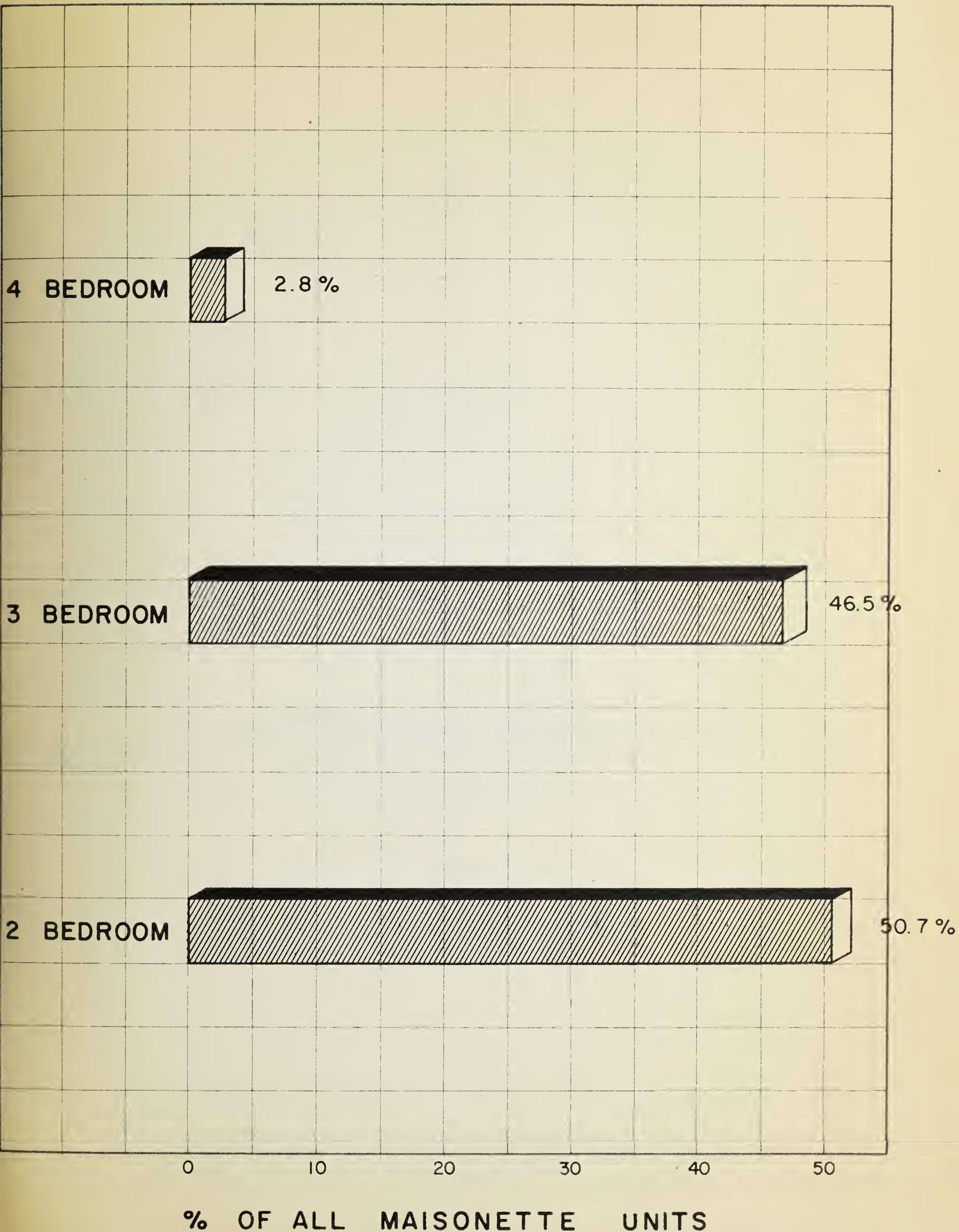
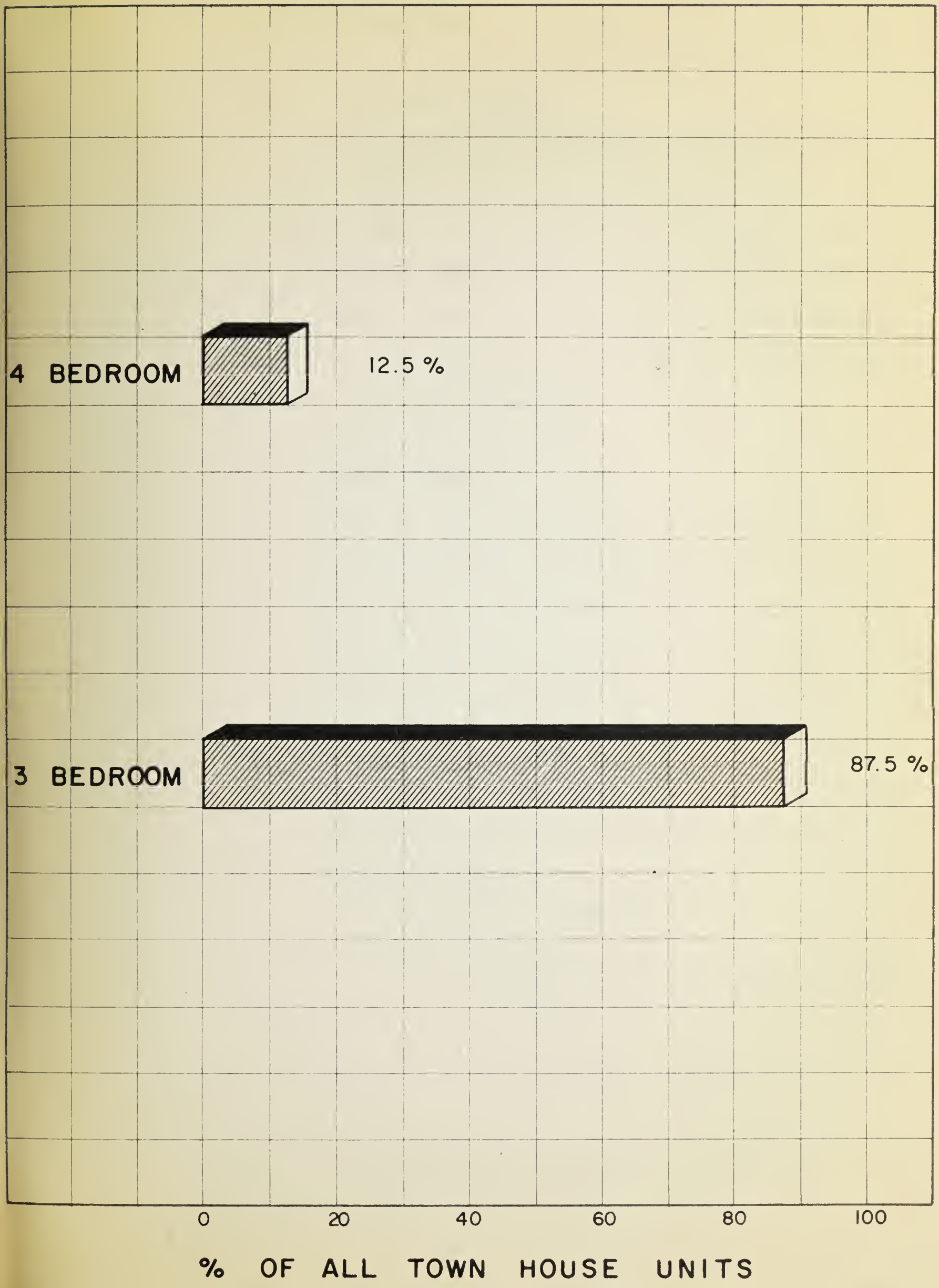


Figure V

DISTRIBUTION OF TOWN HOUSE UNITS

14.



IV. DESIGN COMPUTATIONS =====

(a) Population Estimates

There are two possible methods of estimating the population from a multiple family development. If the number of different sized units is known Table I should be used; however, if only the total number of suites is known then the average figures in Table IV would be appropriate. The first method would produce a more accurate estimate.

(b) School Estimates

When the total population of a development has been estimated the rounded percentages found in Table V can be applied in order to determine the number of pupils in each of the Junior Public, Senior Public, Secondary and Separate School groups. These estimates would be used in determining the impact of a proposed development on an existing area and for planning the relative amounts of different types of development in neighbourhood and community design.

TABLE IV

AVERAGE POPULATION PER UNIT FOR DESIGN*

=====

| | |
|-------------|------------|
| Apartments | 2.5 p.p.u. |
| Maisonettes | 4.0 p.p.u. |
| Town Houses | 4.5 p.p.u. |

* Based upon the observed distribution of unit sizes in Toronto Township.

TABLE V

SCHOOL-AGE POPULATION BY UNIT TYPE FOR DESIGN

=====

(As a percentage of Total Population)

| | <u>APARTMENTS</u> | <u>MAISONETTES</u> | <u>TOWN HOUSES</u> |
|---------------|-------------------|--------------------|--------------------|
| Junior Public | 8.0% | 25.0% | 25.0% |
| Senior Public | 1.5% | 2.5% | 5.5% |
| Secondary | 3.5% | 4.0% | 6.0% |
| Separate | 2.0% | 3.5% | 4.0% |
| | <hr/> | <hr/> | <hr/> |
| | 15.0% | 35.0% | 40.5% |
| | ===== | ===== | ===== |

APPENDIX

TABLE 1. THE EFFECT OF TEMPERATURE ON THE RATE OF
 REACTION OF HYDROGEN PEROXIDE WITH FERROUS SULFATE

Concentration of $H_2O_2 = 0.01M$, $FeSO_4 = 0.01M$

| TEMPERATURE, °C | INITIAL RATE, M/min | INITIAL RATE, M/min | INITIAL RATE, M/min |
|-----------------|-----------------------|-----------------------|-----------------------|
| 10.0 | 0.0001 | 0.0001 | 0.0001 |
| 15.0 | 0.0002 | 0.0002 | 0.0002 |
| 20.0 | 0.0004 | 0.0004 | 0.0004 |
| 25.0 | 0.0008 | 0.0008 | 0.0008 |
| 30.0 | 0.0016 | 0.0016 | 0.0016 |
| 35.0 | 0.0032 | 0.0032 | 0.0032 |
| 40.0 | 0.0064 | 0.0064 | 0.0064 |
| 45.0 | 0.0128 | 0.0128 | 0.0128 |
| 50.0 | 0.0256 | 0.0256 | 0.0256 |
| 55.0 | 0.0512 | 0.0512 | 0.0512 |
| 60.0 | 0.1024 | 0.1024 | 0.1024 |
| 65.0 | 0.2048 | 0.2048 | 0.2048 |
| 70.0 | 0.4096 | 0.4096 | 0.4096 |
| 75.0 | 0.8192 | 0.8192 | 0.8192 |
| 80.0 | 1.6384 | 1.6384 | 1.6384 |
| 85.0 | 3.2768 | 3.2768 | 3.2768 |
| 90.0 | 6.5536 | 6.5536 | 6.5536 |
| 95.0 | 13.1072 | 13.1072 | 13.1072 |
| 100.0 | 26.2144 | 26.2144 | 26.2144 |



